

**California Water Use Efficiency 2002 PSP  
Part One  
Proposition 13 Agricultural Feasibility Study Grant Proposal  
Banta-Carbona Irrigation District**

**A. PROJECT INFORMATION FORM**

1. Applying for: **Prop 13 Agricultural Water Conservation Capital Outlay Feasibility Study Grant**
2. Principal applicant: **Banta-Carbona Irrigation District**
3. Project title: **Banta-Carbona Irrigation District Modernization Feasibility Study**
4. Person authorized to sign and submit proposal: **David Weisenberger, General Manager  
P.O. Box 299, Tracy, CA 95378-0299  
Telephone 209-835-4670  
Fax 209-835-2009  
E-mail bcid@inreach.com**
5. Contact person: **same as above**
6. Funds requested: **\$ 99,204**
7. Applicant funds pledged: **\$ 63,824**
8. Total project costs: **\$ 163,028**
9. Estimated total quantifiable project benefits:

**The benefits will be quantified by the feasibility study and the percentages of benefit to the applicant and to CALFED will be determined.**

Percentage of benefit to be accrued by applicant: **Same as above.**

Percentage of benefit to be accrued by CALFED or others: **Same as above.**

**Part One**  
**A. PROJECT INFORMATION FORM (continued)**

10. Estimated annual amount of water to be saved: **UNKNOWN acre-feet**

Estimated total amount of water to be saved: **UNKNOWN acre-feet**

**Over the life of the agricultural use of water within the district. Years?**

Estimated benefits to be realized in terms of water quality, in-stream flow, other: **This feasibility study will determine what these benefits are, but it is anticipated that reduced salinity in the San Joaquin River will be the benefit.**

11. Duration of project: **October 2002 to September 2004**

12. State Assembly District: **17 and 26**

13. State Senate District: **5 and 12**

14. Congressional District: **11 and 18**

15. County **San Joaquin**

16. Date of most recent Urban Water Management Plan: **n/a**

17. Type of applicant: **Public irrigation district**

18. Project focus: **Agricultural**

19. Project type: **Other: combined (a) implementation of Agricultural Efficient Water Management Practices and (b) CALFED Quantifiable Objectives**

20. Do the actions in this proposal involve physical changes in land use, or potential future changes in land use? **No**

**Part One**  
**B. SIGNATURE PAGE**

By signing below, the official declares the following:

The truthfulness of all representations in the proposal;

The individual signing the form is authorized to submit the proposal on behalf of the applicant and;

The individual signing the form read and understood the conflict of interest and confidentiality section and waives any and all rights to privacy and confidentiality of the proposal on behalf of the applicant.

_____	<u>David Weisenberberger, General Manager</u>	_____
Signature	Name and title	Date

**Part Two**  
**Proposition 13 Agricultural Feasibility Study Grant Proposal**  
**Banta-Carbona Irrigation District**

**PROJECT SUMMARY**

Banta Carbona Irrigation District (BCID) is located near the City of Tracy and discharges drainage water into the CALFED Sub-Region 9. It has approximately 14,200 irrigated acres and pumps surface water from the San Joaquin River and a small amount of Federal water from the Delta-Mendota Canal. All district water distribution is through canals, with a high-energy usage in pumping water from the San Joaquin River. About 3,200 acres are sprinkler or drip irrigated; the remainder are furrow irrigated. All surface runoff is re-circulated within the district. The district discharges approximately 10,800 acre-feet of tile water annually into the San Joaquin River.

The BCID Modernization Feasibility Study is intended to identify and prioritize potential agricultural water conservation capital outlay projects that will improve water use efficiency and project performance. The feasibility study will evaluate alternatives for improving water management practices through a comprehensive assessment of the internal processes both at the level of district conveyance and control, and on-farm irrigation systems. Furthermore, the study will make specific, practical recommendations for implementing projects in order to achieve CALFED Quantifiable Objectives for Sub-Region 9, improve water delivery service to farmers, facilitate capital improvements of on-farm irrigation systems, and modernization of district facilities and operational strategies.

The feasibility study will utilize an expanded version of the Rapid Appraisal Process (RAP) approach to investigate many aspects of irrigation performance in BCID including factors related to items such as canal control strategies and structures, flow measurement capabilities, irrigation method selection, constraints to farmers, and economic and environmental sustainability. A key element of the study is the development of water balances for the district, conveyance system and the farms. A water balance analysis is essential for making meaningful decisions regarding the quantity of water potentially available from various modernization options. The RAP approach and water balance analysis will provide the necessary link between irrigation engineering recommendations and operational strategies.

The study will be conducted in cooperation with the Irrigation Training and Research Center (ITRC) of California Polytechnic State University, San Luis Obispo, California. The ITRC is actively involved with irrigation districts and agricultural water users to develop, implement and monitor solutions for improving irrigation performance.

## **A. SCOPE OF WORK: RELEVANCE AND IMPORTANCE**

### **Project Description**

The Banta-Carbona Irrigation District (BCID) is submitting this grant application in support of a cooperative effort with the Cal Poly Irrigation Training and Research Center (ITRC), under the Consolidated CALFED, Department of Water Resources (DWR), and United States Bureau of Reclamation (USBR) Water Use Efficiency programs. The project will be a comprehensive Modernization Feasibility Study to support the implementation of agricultural water conservation capital outlay projects that will improve water use efficiency and project performance in the BCID service area. The study will be conducted with the cooperation and technical assistance of the Irrigation Training and Research Center (ITRC) of California Polytechnic State University, San Luis Obispo. Specifically, the ITRC will determine the technical feasibility, ease of adoption and risk, and benefit and cost ratio of modernization alternatives identified through a comprehensive analysis of the district's infrastructure and management, as well as on-farm irrigation systems.

The proposed feasibility study will include

- Development of water balances for the district, conveyance system, and farms
- An assessment of the internal processes of farm irrigation
- An assessment of the internal processes of water conveyance and control
- An assessment of the local farm and district economics
- An evaluation of alternatives for improving on-farm irrigation efficiency and water conveyance and control, for the dual purpose of (1) meeting the CALFED Sub-Region 9 quantifiable objectives and (2) improving the economic sustainability of the district and its farmers.

Using the information and recommendations from the feasibility study, the district will be able to target specific actions for improving water use efficiency and quantify the amount of water available for meeting CALFED Quantifiable Objectives (QOs) for Sub-Region 9. It is anticipated that the modernization options to consider will include agricultural water conservation capital outlay projects that address the following: (i) facilitation of capital improvements for on-farm irrigation, (ii) automation of canal structures and pumping facilities, (iii) increasing flexibility in water ordering and delivery, (iv) installation of re-regulating reservoirs, (v) design and implementation of an appropriate flow measurement program, (v) lining or piping ditches, and (vi) increasing on-farm irrigation efficiency.

### **Need for Project**

The Consolidated Water Use Efficiency programs are intended to help ensure that California's water resources are used efficiently and result in multiple benefits. Irrigation districts such as Banta-Carbona are actively pursuing modernization efforts but they need specialized, technical assistance to enhance their traditional in-house engineering expertise. The critical first step for BCID is to develop a comprehensive strategy for identifying, quantifying and linking the goals of the Water Use Efficiency programs with practical actions that can be implemented at the

levels of both the district conveyance and control facilities and on-farm irrigation systems. In addition, the potential contributions related to water quantity, quality, and in-stream flow or timing resulting from modernization projects must be quantified. As CALFED moves forward with the implementation of monitoring guidelines for Water Use Efficiency projects, the ability to quantify the amount of potentially available water from improvements in management and hardware will be critical to understanding and measuring the benefits directly associated with individual projects. The proposed feasibility study is aimed at providing the tools necessary for BCID to select and implement appropriate modernization options, while at the same time being able to assess the resulting benefits to the environment, local economics and district operations.

### **Linkage to CALFED Quantifiable Objectives**

CALFED's Water Use Efficiency Program and Quantifiable Objectives (QOs) are intended to provide a bridge between potential benefits to the water resources in California's Bay-Delta system and local changes in agricultural water management practices. QOs represent the initial estimates of the practical, cost-effective contribution agricultural water users can make towards attaining region-specific CALFED benefits related to water quantity, quality, and in-stream flow or timing. The proposed feasibility study will investigate the potential for addressing Sub-Region 9 (Sacramento-San Joaquin Delta) QOs 81, 84 and 87. The identified and recommended as a result of the study will better enable BCID to manage its water supplies, develop and implement conservation measures, and quantify the potential success of changes in water management practices pursuant to QOs 81, 84 and 87 to the benefit of the Bay-Delta ecology.

Currently there is a single, direct discharge for tile drainage water to the San Joaquin River. There is an estimated base tile flow from this location of approximately 5 cfs and an additional 10 to 30 cfs during the irrigation season. A preliminary estimate is that the district discharges approximately 10,800 acre-feet of tile water annually into the San Joaquin River. The salinity of the tile water is estimated to range between 1,200 to 1,600 ppm throughout the year. Currently, all the water inflows and outflows of the district are not metered, but a rough estimate of the district irrigation efficiency is 65%. This indicates that there may be substantial potential available for reducing deep percolation into the salty water table, which drains into the Bay-Delta. The water balance portion of this feasibility study will refine the estimate of potential savings.

In addition to quantifying the potential for BCID to address specific QOs, the comprehensive analysis of the internal processes at the district and farm levels conducted as part of the study, including the development of detailed water balances, will identify specific actions the district can take to reduce pumping from the San Joaquin River and lessen the amount of tile water that enters the river. The anticipated capital outlay projects outlined in Task 4 of the work plan (Section B) are consistent with the flow paths and possible actions identified for the QOs, namely improved farm irrigation management, more uniform irrigation methods, reduction in canal seepage and increased water delivery service.

### **Project Objectives**

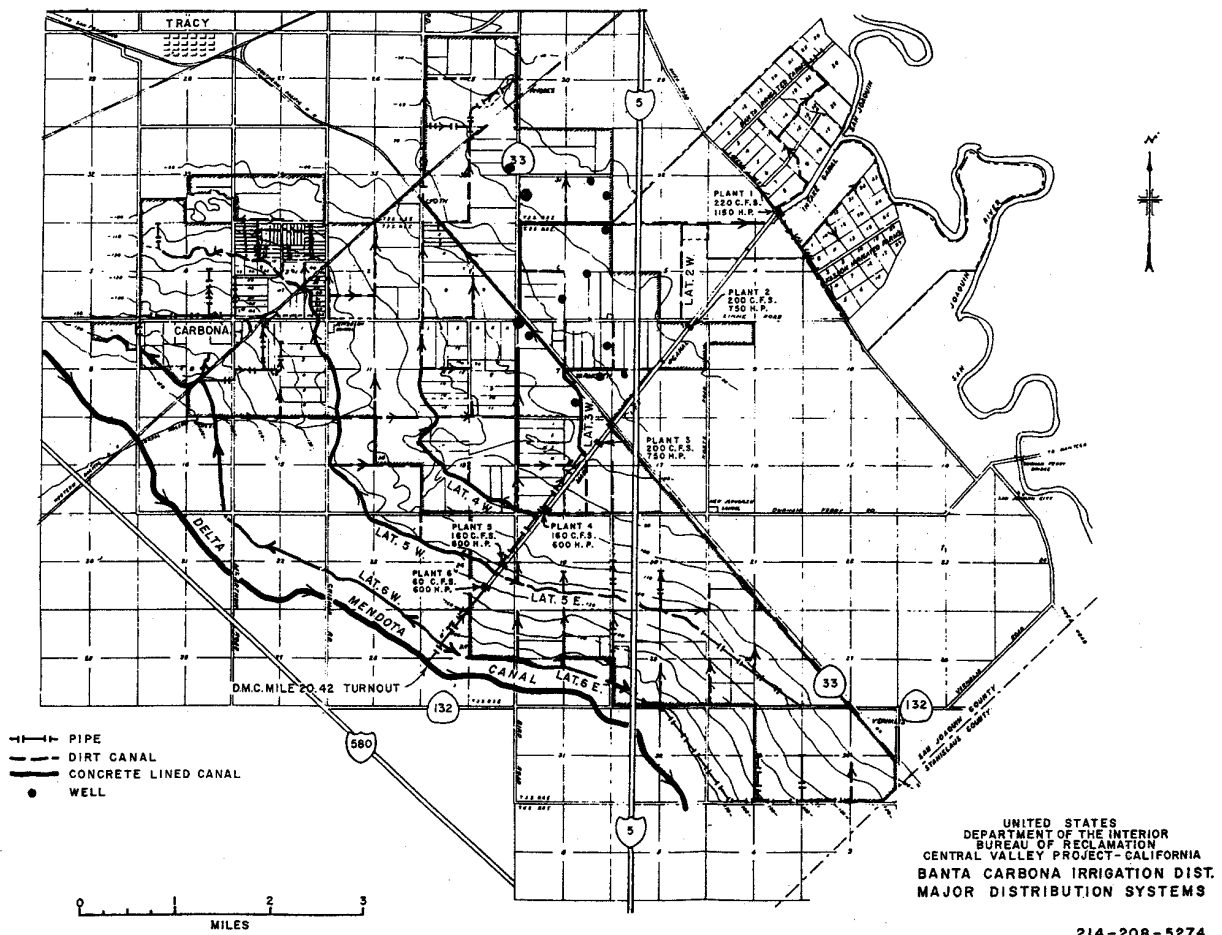
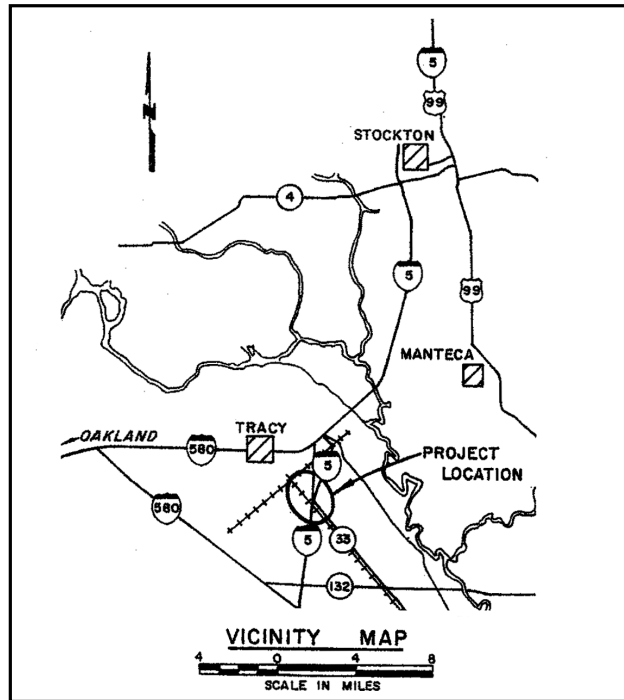
The objective of the study is to identify and prioritize potential agricultural water conservation capital outlay projects that will improve water use efficiency and project performance. By taking

a fresh look at the whole system from a perspective of understanding key aspects of current internal processes, the study will provide specific, practical recommendations that are linked to numerical targets of the CALFED Quantifiable Objectives. Furthermore, the organization and content of the study will provide a systematic project review that will enable the district to make decisions related to hardware and management for the improvement of water delivery service.

### **Scope of the Project**

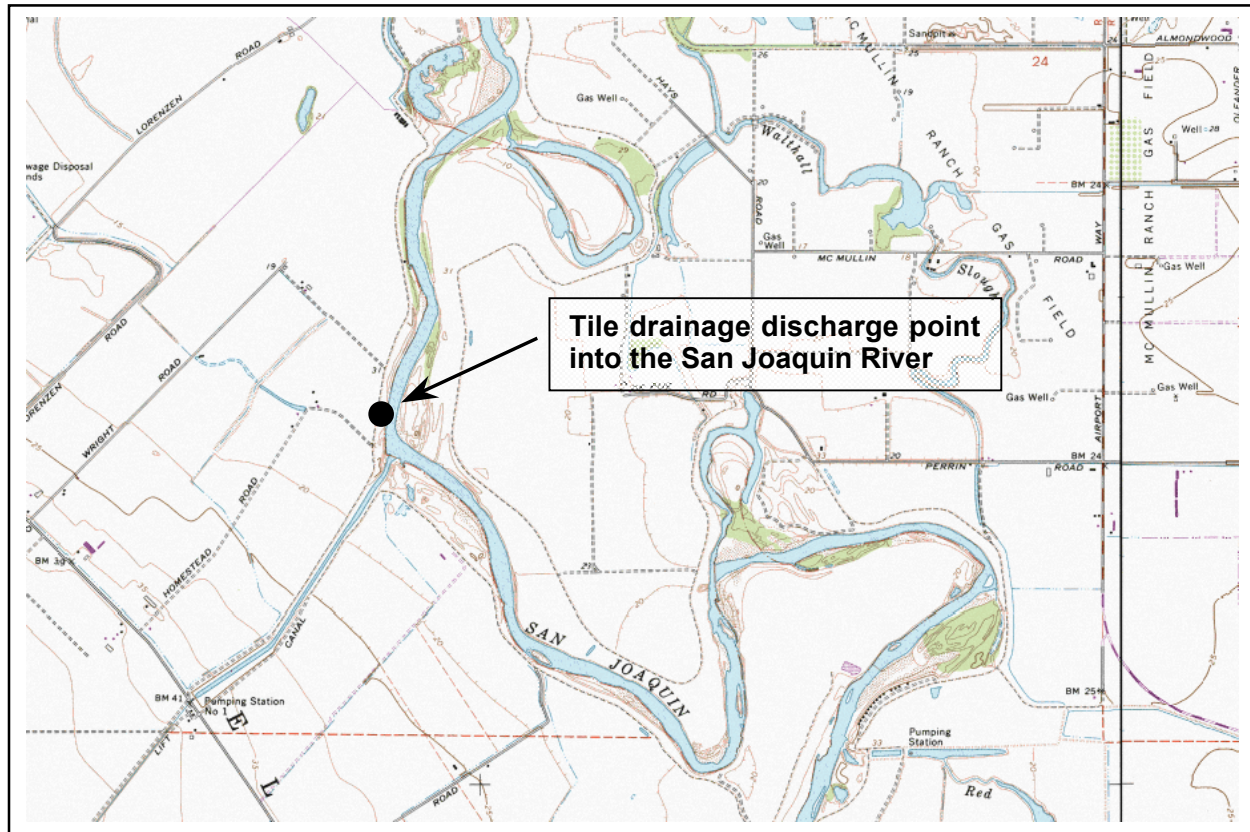
Banta Carbona Irrigation District (BCID) is located near the City of Tracy as shown in Figure 1. BCID discharges drainage water into the CALFED Sub-Region 9 at one location on the San Joaquin River (refer to Figure 2). BCID has approximately 14,200 irrigated acres and pumps surface water from the San Joaquin River and a small amount of Federal water from the Delta-Mendota Canal. Refer to Table 1 for a breakdown of the major crop types and irrigated area.

All district water distribution is through canals, with a high-energy usage in pumping water from the San Joaquin River. About 3,200 acres are sprinkler or drip irrigated; the remainder are furrow irrigated. All surface runoff is re-circulated within the district. A rough estimate of district tile water discharge is approximately 10,800 acre-feet annually into the San Joaquin River.



**Figure 1. Banta-Carbona Irrigation District**





**Figure 2. Tile drainage discharge point into the San Joaquin River**

**Table 1. Cropping Patterns and Irrigated Area in Banta-Carbona Irrigation District**

<b>Crop Type</b>	<b>Irrigated Area, acres</b>
Tomatoes	2,800
Beans	2,200
Apricots	900
Walnuts	2,200
Almonds	1,700
Alfalfa	2,500
Misc. (<5%)	1,900
<b>Total</b>	<b>14,200</b>

Source: Water Conservation Plan, Jan. 2001

Note: Acreage values have been rounded

## **B. SCOPE OF WORK: TECHNICAL/SCIENTIFIC MERIT, FEASIBILITY, MONITORING AND ASSESSMENT**

The ITRC will provide independent technical expertise for the specific tasks summarized below. Upon completion of the study, the information and recommendations for modernization alternatives will be available to support implementation of the most efficient and beneficial mix of management and infrastructure elements. The work plan for the modernization feasibility study is broken down into the following main tasks.

- Task 1- Background Data Collection and Organization
- Task 2- Rapid Appraisal Process (RAP)
- Task 3- Development of Water Balances
- Task 4- Initial Evaluation of Modernization Components
- Task 5- Final Report and Recommendation

### **Task 1- Background Data Collection and Organization**

**Task 1A: Irrigation District Water Assessment Survey.** The first step to evaluating options for BCID is to target the main factors that influence the performance of the structures and operational procedures used to convey and distribute irrigation water. This begins with organization of information that is already available within the district. Information such as crop types, irrigated acreages, flow rates into the system, weather data, budgets, staffing levels, existing water conservation programs, and pumping records must be assembled and then reviewed by ITRC with operations staff and management during a site visit to the project. This background information will be compiled using a tool called the *Irrigation District Water Assessment Survey*. The Water Assessment Survey includes over 200 questions that form the basis of the present state of service provided by BCID and areas for improvement.

In 2000, the BCID participated in the Benchmarking of Flexibility and Needs Survey conducted by the ITRC on behalf of the USBR Mid-Pacific Region, Water Conservation Office. An extensive data set was analyzed for each selected irrigation district to determine the degree of water delivery flexibility provided to farmers and the extent of existing and planned district modernization. The interview questions used for the Benchmarking Survey have recently been revised and updated by the ITRC for use with the Rapid Appraisal Process (RAP) approach.

The following is a general outline of the issues that are covered during the Water Assessment Survey:

- General Irrigation District Characteristics; general project conditions, reservoirs, drainage, groundwater, crops, water supply, water use
- Irrigation District Operations; water delivery system characteristics, flexibility (frequency, rate, duration), flexibility from water suppliers, flow measurement at farm turnouts, facilities and upgrades
- Irrigation District and Farm Economics; district-level economics, water billing, farm economics

- Status and Needs of Modernization Programs; water delivery service, on-farm improvements, canal improvements, water conservation programs, SCADA, training and education

**Task 1B: Grower Water Use Survey and In-Field Checks.** In order to obtain better information about farm irrigation practices in the BCID service area, a *Grower Water Use Survey* will be conducted among district board members. The survey will be performed to determine the particular irrigation management practices for each major crop during a typical year. For each major crop, the grower will be asked to discuss topics including:

- Irrigation methods
- Irrigation scheduling
- Timing of irrigation events
- Amount of water applied during each irrigation event

Approximately three-quarters (75%) of the BCID service area is furrow irrigated. For furrow irrigated areas, growers will be asked questions about spacing, furrow length, set times, advance times, the use of torpedoes and surge, and tailwater return systems. The grower survey will attempt to determine the amount of water applied during each irrigation event for a particular crop, typical soil surface drying time during different times in the year, and the typical soil dryness at the time the previous crop was harvested. Soil surveys will be used to determine the predominate soil types and the degree of soil variability on fields. The grower survey will be accompanied by a rapid in-field check of farm irrigation equipment

The Cal Poly AGWATER software program, together with an advanced EXCEL spreadsheet program developed for CALFED's evaporation study by ITRC, will be used with information obtained during the grower survey to estimate annual field irrigation efficiencies.

### **Task 2- Rapid Appraisal Process (RAP)**

The ITRC has pioneered work on the Rapid Appraisal Process (RAP) approach for irrigation district modernization. In general, the RAP is a quick and focused examination of irrigation systems and projects that can give a reasonably accurate and pragmatic description of the status of irrigation performance and provide a basis for making specific recommendations related to hardware and management practices. The RAP approach will provide an important assessment of the internal processes of water conveyance and control used by the BCID.

The RAP approach will be particularly useful for examining the potential for the BCID to meet the CALFED Quantifiable Objectives for Sub-Region 9. The BCID will have distinct hydrologic, engineering, operational and agronomic conditions, which will affect their ability to contribute to specific Quantifiable Objectives. However, the RAP approach does utilize a uniform methodology based on substantial successful experiences with dozens of irrigation districts in the western U.S. In general, the RAP approach is a systematic procedure that can be used to determine the following:

- Is water potentially available from an irrigation district to meet a Quantifiable Objective?
- What are the affected flow paths related to the potentially available water?

- What are the specific causes of the potentially available water?
- What are possible solutions for meeting the Quantifiable Objective?

The RAP will be performed by professional engineering staff from the ITRC with technical expertise and experience in irrigation district modernization, in conjunction with BCID staff.

Using this information about the hardware and management strategies being used by the BCID, the ITRC will be able to make specific recommendations for the selection and design of structures for improving flow measurement and flow control, drainage and irrigation water recirculation, and water delivery service at the farm level.

### **Task 3- Development of Water Balances**

A major component of the feasibility study for BCID will be the development of detailed water balances for the district service area, conveyance systems and representative farms. A water balance that accounts for all the inflow and outflow components and makes use of confidence intervals, as described below, is fundamental to understanding and quantifying the amount of water that will be available from the implementation of modernization options. The water balances will be representative of conditions in normal, dry and wet years and based on the best data available.

The RAP procedures described in the previous sections are often done at irrigation districts in the U.S. in preparation for a water balance study. A detailed water balance is not done as part of the rapid appraisal itself due to the complexities of the computations involved with a properly done water balance and the amount of data that must be analyzed. However, a water balance is essential for making meaningful decisions regarding the quantity of water potentially available from various options for water conservation plans and strategies for improving water management. The water balances done for this study will be done on a monthly basis in order to properly combine information from water quantity and quality data. Flow rates and water quality (Electrical Conductivity) will be measured throughout one season at both the intake from the San Joaquin River and at the tile drain discharge point into the San Joaquin River.

The water balance developed for the BCID as part of the feasibility study will provide the district with the analytical tools necessary to determine irrigation performance measures such as irrigation efficiency and irrigation sagacity, both of which require a water balance. The computations used in the water balances will benefit from the precision of the crop evapotranspiration model used by the ITRC in previous water balance studies.

### **Task 4- Initial Evaluation of Modernization Components**

The ITRC will determine the technical feasibility, ease of adoption and risk, and benefit and cost ratio of modernization alternatives identified through a comprehensive analysis of the district's infrastructure and management, as well as on-farm irrigation systems.

The information determined from the grower water use surveys and in-field irrigation checks in Task 1 along with the farm water balances computed in Task 3 will be used to generate a

prioritized list of water conservation capital outlay projects at the farm level which may include the following:

- Tailwater return systems
- Modification to irrigation scheduling practices
- Improvements to existing hardware such as gated pipe, better filter systems,
- Improvements to maintenance practices
- Conversion to different irrigation methods, including drip and sprinkler systems

Importantly, the recommendation for converting to alternate irrigation methods will consider factors outlined in the ASCE On-Farm Irrigation Committee publication “Selection of Irrigation Methods for Agriculture” (2000) including economic, social and environmental goals that are consistent with regional water use objectives.

Based on the information compiled during Tasks 1 to 3, a list of modernization options will be compiled and presented to the district. The anticipated water conservation capital outlay projects may include the following:

- Better water level control in the canals
- Supervisory Control and Data Acquisition (SCADA) system
- Improved water ordering procedures
- Installation of variable frequency drive (VFD) units on one pump at each pumping plant
- Improved flow measurement at key points in the district
- Improved flow measurement at deliveries to farm turnouts
- Re-regulating reservoirs for taking advantage of off-peak electricity rates as well as operational flexibility

### **Task 5- Final Report and Recommendations**

Task 5 will include writing, editing and reproducing the Modernization Feasibility Study Draft and Final Reports. The draft and final reports will incorporate the data, analysis, findings and recommendations from Tasks 1 through 4, and will provide the basis for decision-making and impletion of agricultural water conservation capital outlay projects in BCID.

### **Schedule**

A bar chart showing the study schedule is shown in Figure 3. Projected costs for each task are summarized in Section D.

### Schedule of Activities

Task	S-02	O-02	N-02	D-02	J-03	F-03	M-03	A-03	M-03	J-03	J-03	A-03	S-03	O-03	N-03	D-03
Project Organization; District Water Assessment																
Grower Water Use Survey and In-Field Checks																
RAP																
Water Balances																
Initial Evaluation of Modernization Components																
Final Report and Recommendations																

### Schedule of Costs Per Task

Task	ITRC Total \$	BCID Total \$
Project Organization; District Water Assessment	9,534	27,064
Grower Water Use Survey and In-Field Checks	27,002	10,840
RAP	9,237	8,400
Water Balances	12,846	10,680
Initial Evaluation of Modernization Components	17,112	4,160
Final Report and Recommendations	23,472	2,680
Total	99,204	63,824

### Dates of Deliverables and Expenditures

Quarter	Deliverable	ITRC Est. Cost	BCID Est. Cost
4 - 2002	Progress	20,000	30,000
1 - 2003	Grower Survey, RAP results	20,000	15,000
2 - 2003	Initial Water Balance Computations	20,000	8,144
3 - 2003	Initial Options for Modernization	20,000	7,000
4 - 2003	Final Report	19,204	3,680

**Figure 3. Feasibility Study Schedule**

**Monitoring and Assessment**

This component is not required for submission.

**Preliminary Plans and Specifications and Certification Statements**

This component is not required for submission.

## **C. QUALIFICATIONS OF THE APPLICANTS AND COOPERATORS**

The project manager will be David Weisenberger, General Manager of the Banta-Carbona Irrigation District. His resume is attached. Most of his work experience has occurred within the District's service area or directly adjacent to it. His work experience has consisted of working in production agriculture and in delivering water to farmers.

The ITRC has numerous prior experiences in a wide range of successful water conservation and drainage reduction programs, both national and international, with urban and agricultural aspects. The ITRC has provided independent technical expertise for specific water conservation programs for individual districts, at their request. This has included:

- Reviews of modernization and water management plans
- Use of RAP (Rapid Appraisal Process) for identification of modernization needs
- Development of guidelines and assistance with quality control for districts which may be interested in setting up on-farm irrigation evaluation and scheduling programs
- Review of plans or guidelines prepared by consulting engineers for irrigation district modernization or water management programs
- Assistance with the implementation of SCADA (Supervisory Control and Data Acquisition) systems
- Assistance with implementation of flow measurement programs
- Assistance with other modernization efforts, such as improving pumping plant operations, water ordering, pressure control, etc. for improved water and energy management.
- Special expertise in such topics as Supervisory Control and Data Acquisition (SCADA) systems, canal and pipeline automation, flow measurement, and on-farm irrigation.



## **D. BENEFITS AND COSTS**

### **Budget Breakdown and Justification**

#### **1. Budget Breakdown**

Services or Consultants (Cal Poly ITRC):

Personnel: 93,893  
Travel, per diem: 5,311  
Total: \$99,204.

ITRC services are based on the following rates and hours:

<b>Individual</b>	<b>Hours</b>	<b>Rate (incl. Benefits and overhead), \$/hr</b>
Charles Burt	215	119.5
Stuart Styles	46	111.3
Dan Howes	730	59.5
Beau Freeman	40	61.35
Engr. Assistant1	180	29.56
Assistant 2	263	38.78

#### **2. Cost-Sharing**

Budget Breakdown – Personnel: \$63,824

BCID cost-sharing is based on the following rates and hours:

<b>Individual</b>	<b>Hours</b>	<b>Rate (incl. Benefits and overhead), \$/hr</b>
David Weisenberger	336	125
Watermaster	116	50
Assistant Secretary	224	35
Maintenance Supervisor	112	40
Maintenance Worker	40	35
Laborer	48	28

### **Potential Benefits to be Realized and Information to be Gained**

The Board of Directors of the Banta-Carbona Irrigation District believes that by completing a feasibility study that is as comprehensive as the one proposed that both the District and CALFED participants benefit from the knowledge gained as a result of the study. By taking a holistic approach in studying the district the natural result will be a prioritization of potential future actions that can benefit the environment and agricultural production the most for the least cost. It does not necessarily mean that implementing those potential future actions identified would be cost effective for the District or for CALFED at this time. But with quantified knowledge available the feasibility study could be referred to from time to time to evaluate whether or not environmental or agricultural conditions have changed that would warrant implementing actions identified in the study. The above described benefit is the worst case scenario.

There is also the potential that this study would identify cost effective actions that should be implemented immediately that would benefit either the environment, agriculture, or the District or some combination thereof. As described in earlier sections of this proposal some actions that might be identified could be implementing on-farm irrigation improvements that result in water conservation and decreases the amount of salinity entering the Delta. But until this type of study is conducted none of us will know what, when, or where something should be done in the Banta-Carbona Irrigation District to help the Delta, the environment, or agriculture. All of these potential beneficiaries are important to our society as a whole.

### **Benefit Realized and Information Gained versus Costs**

The Feasibility Study will define the costs and benefits.

## **E. OUTREACH, COMMUNITY INVOLVEMENT AND ACCEPTANCE**

As the study area and any resulting actions will be occurring within the service area of the Banta-Carbona Irrigation District (District) the community that would be directly affected would consist of those landowners and farmers that are served by the District. Public outreach during this feasibility study will consist of contacting farmers that farm in the District to participate in the research of on-farm irrigation practices and to encourage them to share economic information about production agriculture. They will be encouraged to share any ideas or opinions they have about water conservation, on-farm irrigation improvements, and about what services they think their District should provide in supporting them in any water conservation efforts.

There haven't been any social or economic benefits recognized that would occur locally during the course of the proposed study period. Though as a result of the study social and economic benefits may be identified as accruing from implementation of any recommended actions.

As the Irrigation and Training Research Center at CAL POLY (ITRC) would be conducting the study hopefully there would be some student learning opportunities at CAL POLY SLO from their participation in this study. Already, as a result of BCID contacting the ITRC to ask if they would conduct this feasibility study, a senior irrigation class conducted an all-day lab visit to the District in February of 2002. This visit provided a younger generation exposure as to how this district, and possibly similar districts, currently work and how they have operated in the past. We would also hope that the ITRC would realize some benefits as a result of conducting this study in their own on-going research of irrigation practices in the world.

P. O. Box 0299  
Tracy, CA 95378-0299  
Telephone: (209) 835-4670  
E-mail: [bcid@inreach.com](mailto:bcid@inreach.com)

## **DAVID K. WEISENBERGER**

### **EXPERIENCE:**

#### **BANTA-CARBONA IRRIGATION DISTRICT**

1997 to Present                      General Manager

Oversee operations and maintenance of +/- 16,500 acre district with San Joaquin River water rights and CVP water contract. Water distribution facilities consisting of open canals, pipelines, pump stations, small electric distribution system. Other responsibilities include personnel management; property management; water conservation program; ground water management program; risk control management and participate in water resource activities.

Current and past project oversight on:

- New office, new shop and new corporation yard;
- Two newly rebuilt transformer 60kv/2.3kv substations;
- Fish Screen facility on San Joaquin River diversion encompassing obtaining grant money, interacting with USFWS, NMFS, DFG, and USBR, on project development, biological opinions, and project management.
- WAPA 2004 power contract, power scheduling development and related post 2004 power issues.
- CVP Long Term Contract renewal.

1996 to 1997                      Special Projects Manager

Oversee development of new office and corporation yard; water conservation program; herbicide program; and night ditch-tender.

1991 to 1996                      Ditch Tender

Distribute and measure water to farm irrigation systems.  
Herbicide application on all district property, including filing appropriate paperwork  
Welding & equipment repair  
Equipment operator, backhoe, small front-end loaders, caterpillars  
Repairing distribution gates and pipelines

#### **DAVE & MICHAEL PETZ RANCH**

1984 to 1991                      Field Operations Manager

Responsibilities included: Farm equipment maintenance and repair; supervision

of ranch employees, including the selection of new employees; planning and direction of cultural activities, planting through harvest; keeping ranch records.

Ranch enterprises included: Almonds, Pistachios, Walnuts, Walnut huller and dehydrator, and custom nut harvesting business.

### **WEISENBERGER FARMS**

1981 to 1984                      Self-employed Farmer

Responsibilities included: crop selections; personnel management; ranch budget formulation and execution of that budget; farm equipment maintenance and repair; crop marketing.

The farm included +/- 2000 acres of diversified farm and ranch land. Crops included dry beans, grains, trees, and hay. Livestock operation was a cow-calf enterprise.

**EDUCATION:**            B.S. Agricultural Management, 1981, Cal Poly, San Luis Obispo, Ca.  
Major: Agricultural Management  
Concentration: Farm Management

**PERSONAL:**            Age: 43  
Married; 3 sons (teenagers)  
U.S. Citizen  
Good Health  
English/ some Spanish  
Pesticide Qualified Applicator License (QAL)

**INTERESTS**            Camping, fishing, R&R with family, member and past Elder of First Presbyterian Church of Tracy, Chairman of Design Committee for new site development for a new church/preschool/daycare facility/senior day care facility for the First Presbyterian Church of Tracy.

**REFERENCES:**        Ms. Frances Mizuno                      Mr. Neil Schild, P.E.  
Assistant Executive Director            Principal Engineer  
San Luis Delta Mendota Water Authority    Montgomery Watson  
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